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Determinants of migrants' knowledge about their healthcare rights

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ABSTRACT

Although an increasing number of studies emphasise migrants' knowledge about their healthcare rights as crucial for their healthcare usage, almost none examine the conditions under which migrants acquire this knowledge. This study contributes to the literature by studying the main determinants of migrants' knowledge about their healthcare rights: Self-interest and necessity, human capital, and social capital. I use unique data collected through the project Migrants' Welfare State Attitudes (MIFARE), where we surveyed 10 different migrant groups within Denmark, the Netherlands, and Germany on their relation to the welfare state, including healthcare. Analysing a total sample of 6,864 migrants using multinomial logistic regression analyses I find that migrants' knowledge about their healthcare rights depends mainly on their education and language skills. Both factors enable migrants to grasp health-related information and to become informed about their healthcare rights. I also observe a network effect since healthcare experiences of family members contribute to migrants' healthcare knowledge. Social ties to the co-ethnic community, however, do not explain why some migrants know more about their healthcare rights than others. Lastly, I find large differences between migrant groups, which remain even after controlling for all relevant factors.

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Introduction

Over the last few decades, an increasing inflow of immigrants challenged European welfare states, leading to several policies governing migrants' access to welfare. Healthcare is thereby defined as a fundamental right (EU, 2000) and most countries have created statutory mechanisms to provide healthcare for migrants based on residence in the country, independent of their ability to pay contributions (Mladovsky, Ingleby, & Rechel, 2012). However, despite the existence of such inclusive healthcare rights, studies report significantly lower use of healthcare among migrants than among natives (Derose, Escarce, & Lurie, 2007; Ku & Matani, 2001; Norredam, Nielsen, & Krasnik, 2009). Next to migrants'

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general better health ('healthy migrant effect', McDonald & Kennedy, 2004) and different perceptions of illnesses (Derose et al., 2007; Hjelm, Bard, Nyberg, & Apelgvist, 2003), recent studies emphasise migrants' unfamiliarity with the healthcare system as a major barrier to their healthcare access (Agudelo-Suárez et al., 2012; Healy & McKee, 2004; Rechel, Mladovsky, Ingleby, Mackenbach, & McKee, 2013; Scheppers, Van Dongen, Dekker, Geertzen, & Dekker, 2006; World Health Organization, 2010a). Such lack of knowledge does not only impede recent migrants; even after several years of residency, migrants do not fully understand the receiving country's healthcare system and their rights within it (Migge & Gilmartin, 2011).

If governments want to guarantee equal treatment for migrants and natives, it is crucial to explore the reasons for such lack of knowledge. However, despite the general acknowledgement of migrants being disadvantaged due to insufficient knowledge of their healthcare rights, we know very little about why this might be the case (Renema, 2018). This study thereby contributes to the existing research by quantitatively examining which factors contribute to migrants' knowledge about their healthcare rights. Specifically, I study the extent to which migrants are aware of the legal conditions under which they possess the same rights as natives regarding access to healthcare.

I suggest three main determinants of migrants' knowledge of their healthcare rights: Self-interest in healthcare, human capital (language skills and education), and social capital resulting from the social relations migrants are embedded within. I first hypothesise that migrants who are of poor health and who have relatives with health problems have a stronger-self interest in acquiring knowledge about their healthcare rights. Second, I hypothesise that migrants with high levels of education and good language skills (hence, high amounts of human capital) are better able to acquire knowledge about their healthcare rights. My third hypothesis states that migrants who are well embedded within their co-ethnic community are more likely to acquire knowledge about their healthcare rights.

I test these hypotheses using data from the survey Migrants' Welfare State Attitudes (MIFARE). MIFARE is the first representative and cross-national survey containing detailed information about first-generation migrants' attitudes and knowledge about the welfare state. The survey was conducted among 10 different migrant groups from EU and non-EU countries in three receiving countries: the Netherlands, Denmark, and Germany. Respondents could answer the survey either on hard-copy or online and could choose between their mother tongue or the host country's main language. The sample analysed in this paper consists of a total of 6,684 migrants.

In the following, I discuss existing literature, relevant theories and derived hypotheses regarding migrants' knowledge of their healthcare rights. Thereafter, I present the empirical strategy, followed by the results. A discussion of the findings and implications for healthcare policies concludes the article.

Context: public healthcare in the three receiving countries and migrants' healthcare rights

The *Danish healthcare system*'s organisation is categorised as a National Healthcare System (NHS). Access to (non-cosmetic) procedures is made available for all residents. The *German healthcare system* is often categorised as a typical Statutory Health Insurance

(SHI) system. Since 2009, health insurance has been mandatory for all citizens and permanent residents in Germany (Busse & Blümel, 2014). In the Netherlands access to primary curative care (such as the general practitioner) is provided to all residents free of charge (Kroneman et al., 2016). In return, mandatory healthcare insurance is required of all residents (with a habitual residency in the Netherlands). In all three receiving countries, healthcare is defined as a fundamental right (EU, 2000) and registered immigrants have immediate access to healthcare after migration and may enjoy the same rights of healthcare provision as natives (Mladovsky et al., 2012).

In this article I study 10 different immigrant groups from countries both inside and outside the EU: Spain, Great Britain, Poland, Romania, Japan, the Philippines, China, Russia, Turkey, and the USA. Immigrants from these countries do not only differ with regards to their economic positions in the three countries of residence (Lubbers, Diehl, Kuhn, & Larsen, 2018) but also in their culturally based perception of health and understanding when formal healthcare is actually required (e.g. Rahim-Williams, Riley, Williams, & Fillingim, 2012). Although the goal of this article is not to provide an in-depth overview of the different healthcare cultures of each migrant group, it is important to note that cultural differences in the perception of health and healthcare have implications for migrants' access to knowledge about their healthcare rights.

Theoretical background

Self-interest and necessity

One of the main motivations to acquire knowledge about a certain topic is self-interest. The need to use healthcare fosters a general interest in the topic and increases the likelihood of making an effort to become informed about this topic. According to Lusardi (2004), who conducted a study on planning and saving for retirement, the general interest in welfare topics depends, among other things, on the extent to which people gain from gathering information about the issue; hence, migrants who have no need for healthcare might be less interested in acquiring knowledge about their right to access this welfare service. This is in line with research on information processing, according to which self-interest does influence attention to certain information sources (see Cassino, Taber, & Lodge, 2007).

Personal health status is very likely to affect people's need for healthcare. Migrants who are healthy usually do not require medicine or medical examination and therefore have less interest in the question of whether they would actually be eligible for healthcare compared to migrants with health problems (Leduc & Proulx, 2004). Despite data on migrant health being patchy, research agrees that on average migrants are particularly healthy ('healthy migrant effect'), mainly because only the very healthy decide to migrate and build a new life whereas the less healthy stay in the country of origin (McDonald & Kennedy, 2004). On the other hand, studies also show that groups of migrants face a particularly high risk of occupational hazards, obesity, and maternal and child health problems (Rechel et al., 2013). Hence, we observe a great diversity among migrants with regard to their health status. The literature also acknowledges significant differences in the perception of health and the consequences for subsequent healthcare use (Rahim-Williams et al., 2012). Within many Asian countries, for example, traditional remedies given

at home are still the first choice to cure illness (Ma, 1999), but also among Turkish migrants, home remedies remain popular (Pieroni, Muenz, Akbulut, Başer, & Durmuşkahya, 2005). Hence, not all migrant groups might associate illness immediately with the need for formal healthcare. Still, numerous studies confirm a strong relation with subjective health reports and objective health (e.g. DeSalvo, Fan, McDonell, & Fihn, 2005). I therefore I hypothesise the following:

> H1a: The more migrants are to in need of healthcare because of bad health, the more likely know about their healthcare rights.

However, not only one's personal health, but also the health of close family members is likely to matter. If the partner, child or parent is sick then this often has implications for the whole family. For example, parents have to take care of the medical bills of their sick children (Case & Paxson, 2001) and in the migrant case, close family members often serve as translators at medical institutions (Småland Goth & Berg, 2011). For such medical activities, knowledge about migrants' healthcare rights is necessary. Moreover, studies show that family members provide a significant share of health-related care (Bonsang, 2009) and that particularly among migrants, trusted networks are crucial for health-related support (Hernández-Plaza, Alonso-Morillejo, & Pozo-Muñoz, 2005). Hence, I hypothesise that:

> H1b: Migrants who have close family members with health problems are more likely to know about their healthcare rights than migrants who do not have family members with health problems.

Human capital

Next to the degree of self-interest and necessity of knowledge acquisition, human capital, the composition of education, experiences and abilities (Becker, 2013), is one of the major concepts associated with knowledge. Welfare programmes are highly complex and bureaucratic, with multiple rules and exceptions concerning recipients' rights (Hernanz, Malherbet, & Pellizzari, 2004). Hence, to acquire knowledge about healthcare programmes, a certain amount of general human capital is necessary. Concerning migrants, two human capital factors seem to matter significantly: Language skills and education. Studies suggest that low language skills are a major barrier to access to health information (Kreps & Sparks, 2008; Rechel et al., 2013). Migrants who do not speak the native language well are not able to read information brochures or to be adequately informed by relevant institutions. Therefore, they face trouble acquiring full knowledge about their rights to access welfare programmes. Moreover, several studies emphasise cultural differences in perceptions of health and symptoms (Rahim-Williams et al., 2012), which interfere with effective communication between practitioners and people of different cultural backgrounds (e.g. Scheppers et al., 2006). Low language skills might enforce this problem and reduce the likelihood of seeking information about healthcare rights, since miscommunication with practitioners may be already anticipated.

Next to language skills, education is likely to affect knowledge acquisition about access to healthcare in the receiving country. Although welfare knowledge is seldom transmitted within schools, schooling enables the cognitive ability to understand complex issues such

as welfare accessibility (Kingston, Hubbard, Lapp, Schroeder, & Wilson, 2003). Indeed, a study on knowledge about pension in the US shows that people who are more highly educated are significantly better informed about their pension rights and entitlements than people with lower levels of education (Gustman & Steinmeier, 2005). Previous studies on migrants' access to healthcare mainly focus on lower educated migrant groups, who are particularly marginalised within the healthcare system (Rechel et al., 2013). However, in recent years, Europe received an increasing number of highly skilled migrants from countries such as Spain, the US, but also China and Japan, which is also reflected in the data of this article (see Appendix, Table A1). If education indeed facilitates the acquisition of knowledge about healthcare rights, then I should find that migrants with high levels of education possess more knowledge about their healthcare rights than migrants with low levels of education.

H2: The better the language skills and the higher the level of education, the more likely migrants are to know about their healthcare rights.

Social capital

Lastly, I argue that migrants' knowledge about their healthcare rights also depends on their embeddedness within specific networks. Social networks create social capital in the form of trusted information (Coleman, 1988), which can be used for the advantage of the network members. Therefore, in order to understand why certain migrants know more about their healthcare rights than others, one has to consider their networks and the embedded social capital.

Studies indeed show that informal networks are important transmitters of information regarding welfare services. A study by Migge and Gilmartin (2011) on patient mobility among migrants in Ireland shows that the majority of migrants do not acquire information about Irish healthcare via formal channels such as Citizen Information Centers, but rather use informal sources such as friends and colleagues. Also Agudelo-Suárez et al. (2012) identify social networks as important facilitators of healthcare knowledge acquisition. In addition, Filgio, Hamersma, and Roth (2015) emphasise the importance of dense networks in information provision with regards to welfare services among Hispanic migrant women in the USA.

The nature of information and knowledge transmission is likely to vary depending on the network characteristics. The most prominent conceptual distinction in the migrant literature is thereby made between bonding and bridging ties. Bonding ties exist between members of the same ethnic group and are expected to enhance solidarity and trust (Portes & Sensenbrenner, 1993) as well as to provide access to trusted information (Flap & Völker, 2004). Bridging ties, on the other hand, refer in the migrant context to contacts with natives. Because they are socialised within host-country institutions, natives are assumed to have better access to information, contacts, and knowledge about the society and its institutions and services (Aguilera, 2005). However, whereas natives are likely to be familiar with general healthcare-related issues such as where to find a good doctor or which treatments are covered by the insurance, they are less acquainted with migrant-specific issues such the conditions under which migrants are eligible to make use of public healthcare. Co-ethnic migrants, on the other hand, are likely to

be more familiar with migrant-specific issues and rules concerning migrants' access to welfare. Filgio et al. (2015), for example, show that, in particular, the ties to co-ethnics facilitate the acquisition of welfare information among Hispanic migrant women. Migge and Gilmartin (2011) also emphasise the importance of co-ethnic relations for information exchange with regards to healthcare. In summary I hypothesise that:

> H3: The more ties to co-ethnics the more likely of migrants are to know about their healthcare rights.

Data, methods, and measurements

Data

The data used in this article is from the MIFARE survey, conducted in the years 2015/2016 in Germany, the Netherlands, and Denmark among 10 different migrant groups from Eastern Europe (Russia, Poland, Rumania), Western Europe (Great Britain, Spain, USA), Asia (Japan, China, and the Philippines), and Turkey. Moreover, a native control group was sampled. The sampling was done by national statistics agencies using the Civil Registration System in the Netherlands and Denmark and by contacting sampled municipalities in Germany.

Within MIFARE we were particularly interested in regular first-generation migrants who have been socialised in different welfare states. Migrant groups were therefore sampled according to their country of birth. Also, all migrants were born in their country of origin and migrated to the receiving country only at or after the age of 16. All respondents where 18 years or older at the time the survey was conducted (Bekhuis, Hedegaard, Seibel, Degen, & Renema, 2018).

Representative samples were drawn based on the distribution of these migrant groups within the respective receiving country. Respondents were approached with a written invitation letter containing the questionnaire as well as a link to webpage, where the survey could be filled out online.

Migrant groups differ quite extensively in their demographic composition including gender, age, length of stay, and education (see Appendix, Table A1). In order to overcome high drop-out rates and validity problems caused by potential misunderstanding of the survey items, the survey was fielded both in the main language of the receiving country and in the main language of the origin country. This provided all migrants (who were literate at least in the main language of their country of origin) the opportunity to participate in the survey.

As mentioned above, respondents had the opportunity to fill out a written questionnaire (hard copy) or answer the questions online. In all three receiving countries and among all migrant groups, the majority of respondents opted for answering the questionnaire handwritten on the hard copy. A relatively generous incentive in the form of a gift card for 10 euros was used in order to boost response rates. Since this contribution is interested in migrants' knowledge regarding migrants' healthcare rights, natives were dropped from the sample. To keep the sample homogeneous I deleted more than 196 cases labelled as Russian but who identify with a different, former Soviet republic. After further deleting cases above the age of 70[1], migrants who do not belong to the respective migrant group[2], and respondents with blank answers on

the variables of interests I conclude with a sample of 6,684 migrants (2,668 in Netherlands, 2,592 in Denmark and 1,604 in Germany).

Measurements

The dependent variable *knowledge healthcare rights* captures the extent to which migrants know about their rights regarding their access to public healthcare in the receiving country. This factor is measured by the question 'At which point after arrival do migrants from [country of origin] have the same rights as natives in [receiving country] to use the public healthcare system?' The answer categories include 'after registering as resident in [receiving country]' (1), 'after residing in [receiving country] for an extended period of time, whether or not they have worked' (2), 'only after they have worked and paid taxes and insurances for an extended period of time' (3), 'once they have become a [receiving country] citizen (obtained nationality)' (4), 'they will never get the same rights' (5). For all three receiving countries, the correct answer is 'after registering as resident' (1). The variable was therefore recoded into a dummy variable with 'not provided correct answer' (0) and 'correct answer' (1).

Self-interest and necessity is captured by migrants' personal health status as well as the health status of their close relatives. Personal health was measured with the question 'How is your health in general?' with answer categories ranging from very good (1) to very bad (5). This is of course not an all-encompassing health measurement as it is subjective. Unfortunately, the data does not provide further and more detailed measurements of personal health such as indicators of chronic illnesses or behavioural risk factors which are classic measures of health status (McDowell, 2006; World Health Organization, 2010b). However, according to the Thomas Theorem (Merton, 1995), it is the subjective assessment of the situation which causes the action. Hence, migrants who subjectively perceive their health status as not well might be more inclined to acquire knowledge about their healthcare rights than migrants who actually have health problems but do not perceive themselves as unwell. I therefore argue that a subjective health measurement is an adequate indicator of self-interest in healthcare and therefore a useful predictor of knowledge about healthcare rights.

Whether migrants have sick relatives in the receiving country was measured by two questions. The first was: 'During the past 12 months, did one of your close relatives (your partner, one of your parents or your parents-in-law, or one of your children) living in [receiving country] receive care because of health problems?'. Since studies also emphasize the importance of family members providing care to their relatives (Bonsang, 2009), I also include whether respondents themselves provide care to their relatives: 'During the past 12 months, did you provide care to one of your close relatives (your partner, one of your parents or your parents-in-law, or one of your children) living in [receiving country] because they had health problems?'. For both questions, the answer categories range from 'No' (0), 'No, I don't have close relatives in [receiving country] '(1), to 'yes, a few times during the past 12 months' (2), 'Yes, several times a month' (3), 'Yes, several times a week' (4), and 'Yes, on a daily basis' (5). I regroup both variables into two dummy variable with 'no relatives receiving care' (0) and 'Yes, relatives receive care within RC' (1) and 'No, did not provide care' (0) and 'Yes, provided care' (1).

For *human capital* I look at migrants' education and their language skills. Education was measured by the highest educational level achieved (either in the country of origin or receiving country). The answer categories vary between origin groups as educational systems differ between countries. Following standardised international surveys such as the ISSP, responses were therefore recoded according to the ISCED-97 scale and vary from 'no formal education ['ISCED 0]' (0) to 'upper tertiary education [ISCED 6]' (6). I regrouped the variable into three categories: 'Low level education – ISCED 0–2' (1), 'medium level education – ISCED 3–4' (2), and 'high level education – ISCED 5–6' (3).

Respondents also had to report their ability to both write and speak the receiving country's language, from 'very well' (1) to 'not at all' (5). I reversed the scale and took the mean of both measures, hence the higher the value the better the subjective language skills of the respondent.

Social capital was measured by asking about respondents' ethnic composition of their friendship networks. Respondents indicated how many of their friends living in the receiving country are originally from their origin country with answer categories ranging from 'all' (1) to 'none' (5). I reversed the scale so that a higher number indicates a higher share of co-ethnic friends.

Lastly, I control for the following characteristics: household income (scale between 1 and 11, resembling the wave 2008 of the ISSP's family income variable); number of household members; gender; the receiving country 'Netherlands' (1), 'Denmark' (2), and 'Germany' (3); length of stay (year interview minus year migration); whether migrants use media sources from the receiving country with answer categories ranging from 'never' (1) to 'daily' (6); and employment status, regrouped into the following categories: employed (1), studying (2), unemployed (3), sick or disabled (4), retired (5), homecarer (6), and something else (7).

Results

Description of the sample

Figure 1 presents the overall percentage of each migrant group who provided the right answer to the healthcare rights question. As we can see, migrant groups differ quite extensively in their knowledge about healthcare rights. Whereas 90% of Russian migrants are aware of their right to use healthcare, this is the case for only 6% of Polish migrants.

Before further investigating the reasons for migrants' knowledge about their healthcare rights, I will present the remaining descriptives of the independent variables (Table 1). Overall, migrants report to be quite healthy with only 3% stating that they have (very) bad health. Forty per cent of migrants report to have relatives in the receiving country who receive care due to health problems and around 22% have provided care themselves to sick family members. The human capital variables show that the migrants in this sample are quite well educated. Only 9% report to have lower secondary education or less whereas 65% possess a degree in higher education. On average, migrants' language skills are above the mean with 3.22 on a scale from 1 to 5.

Regarding social capital, we observe that respondents on average report having more than just a few co-ethnic friends, meaning that migrants are quite embedded within their ethnic community.

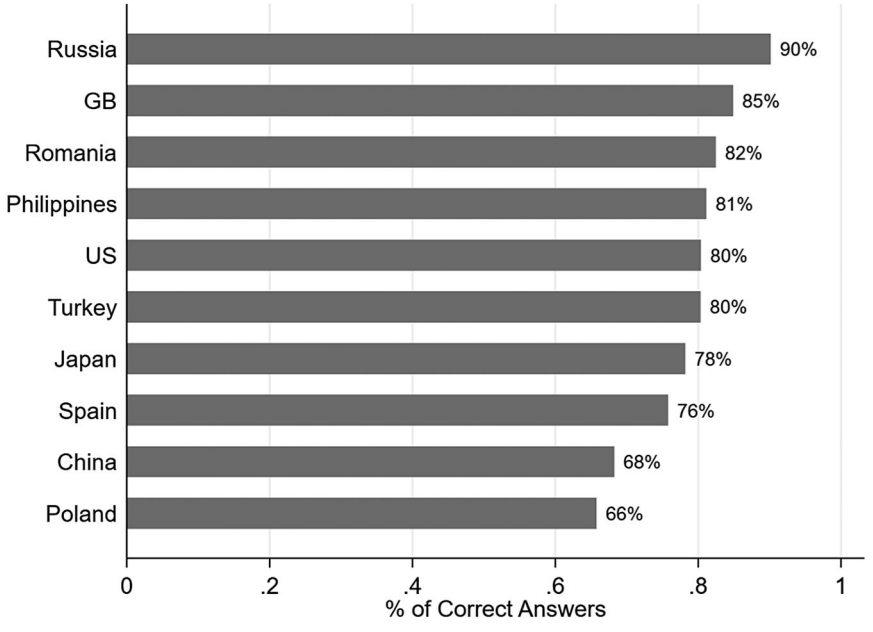

Figure 1. Percentage of migrants who possess knowledge about their healthcare rights, by migrant group.

Note: Total number of respondents per migrant group: Russia – 731; Great Britain – 787; Romania – 650; Philippines – 530; US – 683; Turkey – 371; Japan – 871; Spain – 842; China – 727; Poland – 672.

The majority of migrants reports an occupation: 67% of migrants are employed. Table A1 in the appendix reveals however, that the employment status varies between migrant groups. Among Turks, only 55% are employed compared to, for example, 75% of Spanish migrants. Migrants are on average 40 years old, with Chinese migrants being the youngest (35 years on average) and migrants from Great Britain being the oldest migrant group (46 years on average). We also see that the sample consists of more women than men. This is particularly true for migrants from the Philippines, who often migrate to Europe for reasons of family migration (see Table A1 in the appendix). Moreover, the average length of stay is around 11 years and migrants use media sources (newspaper, television, etc.) weekly to several times a week. Thirty-nine per cent of the sample lives in the Netherlands, 38% in Denmark and 23% in Germany. The distribution among migrant groups is quite equal; only Turks represent a quite small sample.

Analyses and main results

Table 2 presents the odds ratios of the logistic regressions explaining knowledge about healthcare rights. Models A to F contain stepwise inclusion of the variables of interest, whereas the last model (G) includes all variables of interest.

The first three models test the self-interest hypotheses (H1a–H1b). I argued that migrants who suffer from health problems or who have close relatives with health problems would have a stronger interest in the topic of healthcare and therefore be more likely to know about their healthcare rights than migrants with good health and no sick relatives. However, compared with migrants of very good health, migrants with fair or

Table 1. Descriptives independent variables (percentages for nominal/categorial and mean for continuous variables).

Variable	%/ Mean	SD	Min.	Max.
Health status				
Very bad	0.3%		0	1
Bad	2.4%		0	1
Fair	15%		0	1
Good	46%		0	1
Very good	36.4%		0	1
Relatives receive care in RC	40%		0	1
Providing care to relatives	22%		0	1
Education				
ISCED 0–2	8%		0	1
ISCED 3–4	26%		0	1
ISCED 5–6	65%		0	1
Language skills	3.22	1.18	1	5
Share of co-ethnic friends	2.74	1.06	1	5
Employment status				
Employed	67%		0	1
In education	10%		0	1
Unemployed	6%		0	1
Sick or disabled	2%		0	1
Retired	4%		0	1
Homecarer	9%		0	1
Something else	3%		0	1
Age	40.21	11.96	18	70
Gender (female)	62%		0	1
Length of stay (years)	11.02	10.28	0	49
RC media use	4.69	1.59	1	6
Receiving country				
The Netherlands	39%		0	1
Denmark	38%		0	1
Germany	23%		0	1
Migrant groups				
Phillipines	8%		0	1
Japan	13%		0	1
China	11%		0	1
Poland	10%		0	1
Russia	11%		0	1
Spain	12%		0	1
Great Britain	11%		0	1
Turkey	5%		0	1
Romania	9%		0	1
USA	10%		0	1
N	*6864*			

even bad health possess *less* knowledge about healthcare rights, rather than more. By contrast, the odds that migrants, who report a very bad health status, possess correct knowledge of their healthcare rights, are higher. However, this effect is not significant, which can be attributed to the low number of cases in this category (only 22).

One explanation for this health status finding could be the limited measurement of personal health status as discussed in the measurement section. I will come back to this issue in the conclusion. In addition, one can argue that healthy people are healthy because they are interested in staying healthy, which also implies dealing with one's own rights in the healthcare system. Very sick people, on the other hand, are likely to have frequent contact with medical institutions in order to receive urgent treatment; dealing with the healthcare insurance in this context is likely to make migrants aware of their healthcare rights. This discrepancy in knowledge about healthcare rights between healthy and sick migrants has

Table 2. Logistic regressions, odds ratio estimations: determinants of knowledge about healthcare rights.

	Model A	Model B	Model C	Model D	Model E	Model F	Model G
Health status:	*ref.*						*ref.*
Very good							
Good	0.967						1.000
	(0.069)						(0.072)
Fair	0.740**						0.809*
	(0.072)						(0.080)
Bad	0.681+						0.738
	(0.145)						(0.158)
Very bad	1.629						1.670
	(1.165)						(1.250)
Relatives receive care		1.154*					1.231**
		(0.077)					(0.094)
Provide care to relatives			0.983				0.886
			(0.076)				(0.078)
Language skills				1.250***			1.210***
				(0.047)			(0.047)
Education:					*ref.*		*ref.*
ISCED 0–2							
ISCED 3–4					1.059		1.000
					(0.126)		(0.121)
ISCED 5–6					1.514***		1.364**
					(0.174)		(0.162)
Share of co-ethnic friends:						*ref.*	*ref.*
None/few							
Several						0.982	0.970
						(0.077)	(0.077)
Most/all						0.855*	0.903
						(0.068)	(0.073)
Employment status: Employed	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
in Education	0.946	0.958	0.939	0.963	0.945	0.934	0.976
	(0.108)	(0.109)	(0.107)	(0.110)	(0.107)	(0.106)	(0.112)
Unemployed	0.954	0.917	0.917	0.947	0.964	0.917	1.009
	(0.128)	(0.123)	(0.122)	(0.127)	(0.129)	(0.123)	(0.137)
Sick/disabled	1.173	1.001	1.005	1.073	1.109	1.000	1.295
	(0.332)	(0.261)	(0.261)	(0.283)	(0.289)	(0.261)	(0.372)
Retired	0.643*	0.633*	0.634*	0.639*	0.653*	0.640*	0.667*
	(0.129)	(0.127)	(0.127)	(0.127)	(0.131)	(0.128)	(0.134)
Looking after home	1.042	1.018	1.035	1.076	1.076	1.040	1.103
	(0.120)	(0.118)	(0.119)	(0.125)	(0.125)	(0.120)	(0.129)
Something else	0.818	0.806	0.803	0.814	0.821	0.798	0.833
	(0.144)	(0.141)	(0.140)	(0.142)	(0.143)	(0.140)	(0.147)
RC Media consumption	1.090***	1.092***	1.094***	1.037	1.091***	1.088***	1.037
	(0.023)	(0.023)	(0.023)	(0.024)	(0.023)	(0.023)	(0.024)
Age	0.991*	0.988**	0.989**	0.996	0.990*	0.988**	0.996
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
Gender (Female)	1.292***	1.296***	1.293***	1.209**	1.273***	1.290***	1.213**
	(0.088)	(0.088)	(0.088)	(0.084)	(0.087)	(0.088)	(0.085)
Length of stay in years	1.019+	1.017	1.019+	0.991	1.023*	1.019+	0.998
	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)	(0.011)	(0.012)
Length of stay squared	1.000	1.000	1.000	1.000	1.000+	1.000	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Receiving country:							
Denmark	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Netherlands	0.458***	0.458***	0.455***	0.480***	0.452***	0.457***	0.474***
	(0.037)	(0.037)	(0.037)	(0.039)	(0.037)	(0.037)	(0.039)
Germany	0.241***	0.242***	0.239***	0.224***	0.236***	0.243***	0.229***
	(0.020)	(0.020)	(0.020)	(0.019)	(0.020)	(0.020)	(0.019)
Origin country:							
Japan	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Philippines	0.759+	0.797	0.767+	0.701*	0.743*	0.782+	0.725*

(*Continued*)

Table 2. Continued.

	Model A	Model B	Model C	Model D	Model E	Model F	Model G
	(0.112)	(0.118)	(0.113)	(0.104)	(0.110)	(0.116)	(0.110)
China	0.520***	0.530***	0.522***	0.529***	0.504***	0.531***	0.539***
	(0.064)	(0.065)	(0.065)	(0.065)	(0.062)	(0.066)	(0.069)
Poland	0.452***	0.452***	0.442***	0.421***	0.507***	0.453***	0.510***
	(0.055)	(0.055)	(0.054)	(0.052)	(0.063)	(0.055)	(0.066)
Russia	2.164***	2.094***	2.088***	1.889***	2.048***	2.110***	1.962***
	(0.332)	(0.318)	(0.318)	(0.291)	(0.313)	(0.323)	(0.309)
Spain	0.850	0.870	0.859	0.788*	0.875	0.848	0.826
	(0.102)	(0.105)	(0.103)	(0.095)	(0.105)	(0.103)	(0.103)
Great Britain	1.601***	1.669***	1.645***	1.465**	1.636***	1.589***	1.471**
	(0.219)	(0.228)	(0.224)	(0.202)	(0.222)	(0.221)	(0.209)
Turkey	1.062	1.066	1.027	1.118	1.176	1.093	1.387+
	(0.177)	(0.179)	(0.171)	(0.189)	(0.199)	(0.185)	(0.247)
Romania	1.116	1.145	1.116	1.026	1.175	1.124	1.143
	(0.154)	(0.159)	(0.154)	(0.143)	(0.163)	(0.155)	(0.162)
USA	1.089	1.129	1.129	1.005	1.056	1.089	0.933
	(0.142)	(0.146)	(0.147)	(0.133)	(0.138)	(0.145)	(0.127)
N	**6864**	**6864**	**6864**	**6864**	**6864**	**6864**	**6864**

Odds ratio; Standard errors in parentheses.
$+p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

to be considered by healthcare policy makers who aim at a full coverage of healthcare use across the population.

Models B and C illustrate the effect of having sick relatives. I thereby distinguish between having sick relatives who receive care in the receiving country (Model B) and providing care to sick relatives (Model C). We see that the odds of knowing about healthcare rights are .154 higher if migrants report to have a close family member who received care within the last 12 months due to health problems. However, contrary to my hypothesis, providing care to sick family members does not increase the likelihood of knowing healthcare rights. Most inner-family healthcare provision is provided by women, particularly in more traditional households where women are mainly responsible for family care (Arksey & Glendinning, 2008), whereas men enter the labour market and might therefore be more likely to acquire healthcare information. However, this variance is captured by the gender variable. Moreover, we see that migrant women actually know significantly more about their healthcare rights than do migrant men, which might be explained by healthcare still being considered a 'female issue' with women expressing a higher interest in and responsibility for health than men (Mustard, Kaufert, Kozyrskyj, & Mayer, 1998). Interestingly, indirect experience with healthcare institutions seems to matter. Sick relatives who receive care not from the respondent themselves but from other persons or institutions are likely to engage in information exchange regarding their healthcare rights, which they are likely to pass on to their family.

In models D and E, I test the human capital hypothesis (H2). I argued that migrants' knowledge about their healthcare rights also depends largely on their language skills and education. Model D shows that language skills indeed increase the odds of knowing the healthcare rights. Further analyses (not presented here) show that the effect of language skills is particularly relevant for migrant women within the first years of migration. Following my argument above, namely that women have a stronger self-interest in healthcare than men, this result suggests that learning the receiving country's language enables migrant women to follow their interest in healthcare in the receiving country and

acquire knowledge about their healthcare rights. In addition, older migrants in particular seem to benefit from skills in the host country's language. Older migrants generally know less about their healthcare rights than younger migrants. This knowledge gap seems to increase if older migrants do not speak the host country language well.

Migrants with a tertiary education possess better knowledge than migrants with only primary education or secondary education. The effects hardly change in model G, where all variables are taken into account. Hence, human capital clearly matters and healthcare institutions should therefore pay special attention to migrants with low language skills and lower education in order to guarantee full healthcare coverage.

Lastly, I argued that social networks also matter and that specifically contact to peers from the own migrant group should be relevant in acquiring knowledge about healthcare rights (H3). However, model F shows that migrants who report the majority of their friends coming from the same home country, know significantly less about their healthcare rights than migrants who report only a few or even no co-ethnic friends. However, this effect becomes smaller and insignificant in model G, where I control for all other relevant variables. Further analyses (not presented here) indicate that the social capital effect found in model F can be mainly attributed to its correlation with language skills. Migrants who possess good language skills are also less embedded within their own ethnic community and rather have ties to the native population (Martinovic, van Tubergen, & Maas, 2011).

Regarding the control variables, I already discussed the impact of gender and age. Moreover, the longer migrants resided in the receiving country, the higher the odds of possessing knowledge about their healthcare rights. Additional robustness checks where I treat age and length of stay as categorical variables do not provide significant differences in the results (not presented here).

Conclusion

This paper is one of the first contributions investigating migrants' knowledge about their healthcare rights. This study is relevant for two reasons. First, knowledge about access to social rights is fundamental for functioning welfare states. Only people who understand the welfare system can fully benefit from *and* contribute to the system. Second, knowledge about healthcare rights is associated with the concept of health literacy, 'the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions' (Ratzan, 2001, p. 210). If people do not know their rights regarding their access to healthcare, this might adversely affect their health literacy, which in turn is crucial for general health.

Migrants are generally disadvantaged due to their unfamiliarity with receiving countries' welfare systems. Previous studies on migrants and healthcare emphasise the importance of knowledge for migrants to make adequate use of receiving countries' healthcare systems (Rechel et al., 2013). In order to guarantee unbiased and equal healthcare treatment to all migrant groups, we need to understand which factors increase migrants' knowledge and which might work as barriers. I thereby specifically look at migrants' knowledge about their *general* entitlements of healthcare, regarding their access to public healthcare. If migrants are not aware of their most basic rights, then

the chances of them knowing about specific measures such as treatment options or insurance policies are even lower.

Using unique data from MIFARE, I study 10 different migrant groups in three receiving countries: Denmark, the Netherlands, and Germany. I argue that migrants are more likely to know about their healthcare rights if (a) they have a personal interest in the topic because of their own health status or because of sick relatives in the receiving country, (b) they possess good language skills and a high level of education, and (c) they are embedded within co-ethnic relations that are likely to provide relevant information on migrants' legal rights within the healthcare system.

I first study the effect of migrants' personal health and the health of close family members on their knowledge about their healthcare rights. I argue, that migrants with poor health and who have close family members with health problems have a stronger interest in their healthcare rights, and therefore also acquire more knowledge about this topic. However, results are mixed: It is not the unhealthy migrants who know more about their rights, but the healthy ones. One explanation for this puzzle might be that the causal relation goes partly the other way around: A general interest in health leads to both, a healthier lifestyle and an exploration of healthcare rights. Generally, this finding is alarming, as it shows that particularly the most vulnerable group, namely sick migrants, do not possess sufficient knowledge about their healthcare rights.

I also find no effect of providing care to sick family members on healthcare knowledge. Rather, it seems important that family members with health problems *receive* care. In all three receiving countries, care is institutionalised (if not provided by the family). Hence, the experience of family members with healthcare institutions is likely to drive a general exploration within the family about their rights within the receiving country's healthcare system. These results therefore indicate that it is less about migrants' personal interest but about their experiences one step removed from the healthcare system which contribute to their knowledge about healthcare rights.

In a second step, I investigate the impact of migrants' human capital in form of language skills and education on their knowledge about healthcare rights. Particularly migrants who do not speak or write the destination country's language well and who possess only lower or secondary education know significantly less about their healthcare rights than migrants with good language skills and tertiary education. This is in line with other studies, which find human capital to be a main predictor of healthcare utility (Kasper, 2000). Migrants in that sense experience a double disadvantage. In addition to general socio-economic factors which hinder their healthcare utilisation, migrants must make an additional effort to understand their healthcare rights within an unfamiliar context. This can be burdensome and policies should therefore pay particular attention to the provision of sufficient information to migrants of lower socio-economic status. Host countries should invest in information programmes educating immigrants about their rights within the welfare system. Studies have shown that even mild information intervention in the form of brochures have significant effect in welfare behaviour (Liebman & Luttmer, 2015). Migrant health policies should also include measures to improve the provision of information by offering brochures in different languages, or interpreting services (Rechel et al., 2013). In the Netherlands this is already the case, as healthcare institutions increasingly provide interpreter services to facilitate immigrants' access to healthcare (Mladovsky et al., 2012).

Lastly, I argued that migrants benefit from social embeddedness within co-ethnic networks. However, I do not find any support for this assumption. A high share of co-ethnic friends is actually associated with less knowledge about their healthcare rights; however, this effect becomes insignificant once controlled for language skills, indicating that migrants with low language skills are also more likely to have many co-ethnic friends.

In addition to these findings, the data reveals large differences in healthcare knowledge between migrant groups, which remain after controlling for health, human capital, and social capital. An explanation could be cultural differences in health perceptions, which encourage or discourage the exploration of healthcare rights (Rahim-Williams et al., 2012). Migrants who prefer home remedies over public healthcare (Ma, 1999; Pieroni et al., 2005) might be less inclined to be concerned with their healthcare rights. If this is the case, my results for personal health are most likely underestimated. Moreover, institutional and cultural differences in healthcare between origin and receiving country might explain why certain migrants are quite dubious about the benefits of health services within the receiving country (Scheppers et al., 2006), which is also likely to influence their efforts to acquire knowledge about their healthcare rights.

The remaining knowledge gap between migrant groups might also be related to the phenomenon of patient mobility, meaning migrants seeking healthcare in their country of origin instead of in the receiving country (Migge & Gilmartin, 2011). In this case, migrants who seek treatment in their home country might be less likely to be aware of their healthcare rights than migrants who depend on the healthcare in the receiving country. Further research is encouraged to examine these group differences in order to understand how culture and home institutions affect migrants' chances of healthcare knowledge acquisition.

Of course, this study also contains some limitations. Among others, this study examines only individual predictors of healthcare knowledge. Mainly due to the lack of respective data, institutional factors such as the availability of health information centers within municipalities are not taken into account. One could also argue that the general level in the receiving country of receptiveness towards migrants facilitates the acquisition of knowledge of their healthcare rights. Both factors would contribute to our understanding of the relevance of co-ethnic networks, for example, since these networks might be particularly relevant if institutional and societal support is not provided. Also, due to the cross-sectional nature of the data, an examination of the inter-relation between migrants' human and social capital is difficult (Coleman, 1988). We know that on the one hand that migrants' human capital (language skills, education, employment) is a strong facilitator for creating relations with natives (Lancee & Seibel, 2014). On the other hand, several studies have shown that migrants' social relations help creating human capital. For example, social networks are crucial for finding employment (Seibel & van Tubergen, 2013). Hence, we do not know whether migrants' human capital leads to specific social relations which in turn increase their knowledge about their healthcare rights or whether social relations lead to better language skills, for example, which facilitate the acquisition of healthcare knowledge. I therefore suggest future research to follow a longitudinal approach in order to examine the causal mechanisms of human and social capital on healthcare rights knowledge among migrants.

In addition, I miss more adequate, classic measurements of personal health status such as information on chronic diseases or behavioural risk factors (McDowell, 2006; World

Health Organization, 2010b) which distinguish more clearly among concepts of physical health, mental health, and social health (Huber et al., 2011). Studies show that the rating of personal health depends strongly on cultural background and the associated cultural understanding of sickness and treatment (Rahim-Williams et al., 2012). Therefore, depending on their origin, migrants might understand and respond to the question about their general health status differently. I therefore suggest future research include more precise measurements of health status in order to receive a clearer understanding of the impact of health on migrants' knowledge of their healthcare rights.

The data is cross-sectional, therefore room is left for questioning the causal inference of personal health status and knowledge about healthcare access within the receiving country. One could argue that immigrants who know more about their healthcare rights also make use of public healthcare more often and are for that reason healthier. The causal relation of both variables is difficult to test and the truth probably lies in the middle. Nevertheless, this study should be supplemented with panel data in order to adequately address the problem of causality.

Lastly, this study does not investigate potential dissimilarities among recipient countries in migrants' knowledge about their healthcare rights. Denmark, the Netherlands, and Germany differ quite extensively in their healthcare systems. Such systematic disparities are likely to affect migrants' ability to acquire knowledge about their healthcare rights. Future research should therefore consider potential country differences.

Notes

1. Additional analyses including migrants over the age of 70 show that the results do not differ.
2. Among the Russian population, almost 200 migrants do not identify as Russians but as Ukrainian or another group which belonged to the former Soviet Union.

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Appendix

Table A1. Descriptives by migrant group (percentages for nominal/categorial and mean for continuous variables).

Origin country	Russia		GB		Romania		Philippines		US		Turkey		Japan		Spain		China		Poland			
Variable	%/mean	SD	%/mean	SD	%/mean	SD	%/mean	SD	%/mean	SD	%/mean	SD	%/mean	SD	%/mean	SD	%/mean	SD	%/mean	SD	Min.	Max.
Health status																						
(Very) bad	4%		4%		2%		2%		2%		7%		2%		2%		1%		5%		0	1
Fair	25%		11%		14%		12%		7%		27%		17%		10%		13%		18%		0	1
Good	58%		39%		47%		54%		41%		46%		43%		39%		45%		51%		0	1
Very good	13%		47%		37%		33%		50%		19%		38%		49%		41%		26%		0	1
Relatives receive care in RC	0.50	0.50	0.41	0.49	0.32	0.47	0.27	0.45	0.50	0.50	0.26	0.44	0.50	0.50	0.37	0.48	0.34	0.48	0.36	0.48	0	1
Providing care to relatives	0.22	0.41	0.22	0.42	0.22	0.41	0.15	0.35	0.24	0.43	0.23	0.42	0.14	0.34	0.26	0.44	0.28	0.45	0.25	0.43	0	1
Education																						
ISCED 0–2	2%		7%		4%		6%		3%		34%		6%		9%		6%		20%		0	1
ISCED 3–4	23%		29%		38%		16%		13%		38%		27%		24%		13%		46%		0	1
ISCED 5–6	75%		64%		58%		77%		84%		28%		68%		67%		81%		34%		0	1
Language skills	3.55	1.11	3.53	1.20	3.25	1.24	3.41	0.81	3.44	1.18	3.02	0.90	2.93	1.24	3.08	1.27	2.78	1.09	3.23	1.18	1	5
Share of co-ethnic friends	2.78	1.03	2.09	0.87	2.81	1.12	2.99	1.03	2.04	0.88	3.67	0.94	2.89	0.94	2.59	1.01	3.05	0.96	3.03	1.02	1	5
Employment status																						
Employed	61%		74%		71%		59%		70%		55%		63%		75%		59%		75%		0	1
In education	9%		6%		10%		6%		8%		4%		7%		12%		25%		4%		0	1
Unemployed	8%		3%		4%		9%		6%		14%		7%		6%		4%		4%		0	1
Sick or disabled	2%		3%		1%		2%		1%		6%		0%		1%		1%		2%		0	1
Retired	2%		8%		2%		2%		6%		8%		5%		1%		0%		3%		0	1
Looking after home	14%		5%		7%		15%		8%		9%		14%		3%		8%		9%		0	1
Something else	3%		2%		4%		8%		2%		3%		3%		2%		3%		3%		0	1
Age	41.15	11.21	46.14	12.69	36.44	11.48	40.54	11.04	43.10	12.83	42.74	10.20	43.33	11.10	35.26	9.94	34.55	10.00	39.58	12.32	18	70
Gender (female)	80%		38%		60%		89%		53%		47%		74%		54%		63%		64%		0	1
Length of stay (years)	10.27	7.03	15.45	12.34	8.52	8.68	10.78	8.87	12.55	11.78	17.80	11.13	11.91	11.74	7.73	8.92	7.65	6.94	10.54	9.40	0	44
RC media use	4.96	1.44	4.74	1.56	4.74	1.51	5.18	1.28	4.70	1.52	5.13	1.24	4.47	1.76	4.09	1.76	4.47	1.63	4.92	1.47	1	6
N	731		787		650		530		683		371		871		842		727		672			

Table A2. List of survey questions.

Variable name	Question	Answer categories	Recoding
	Dependent variable		
Knowledge about healthcare rights	The following questions are about your KNOWLEDGE of the rights of migrants from [origin country] living in [receiving country] If you do not know the answer, please just provide us with your best guess. At which point after arrival do migrants from [origin country] have the same rights as natives of [receiving country] to use the public health care system?	1. After registering as resident in [receiving country] 2. After residing in [receiving country] for an extended period of time, whether or not they have worked 3. Only after they have worked and paid taxes and insurances for an extended period of time 4. Once they have become a [receiving country] citizen (obtained nationality) 5. They will never get the same rights	0. Incorrect answer 1. Correct answer (after registering as resident in [receiving country])
Self-Interest	Independent variables		
Personal health status	How good is your health in general?	1. Very good 2. Good 3. Fair 4. Bad 5. Very bad	1. (very) bad 2. Fair 3. Good 4. Very good
Health status of relatives			
Provide care to relatives	During the 12 past 12 months, did you provide care to one of your close relatives (your partner, one of your parents or your parents-in-law or one of your children) living in RC receive care because of health problems?	0. I don't have close relatives in RC 1. Yes, on a daily basis 2. Yes, several times a week 3. Yes, several times a month 4. Yes, a few times during the past 12 months 5. No	0. No; do not provide care to relatives 1. yes, do provide care to relatives
Relatives receive care	During the 12 past 12 months, did one of your close relatives (your partner, one of your parents or your parents-in-law or one of your children) living in RC receive care because of health problems?	0. I don't have close relatives in RC 1. Yes, on a daily basis 2. Yes, several times a week 3. Yes, several times a month 4. Yes, a few times during the past 12 months 5. No	0. No; No relative receives care in RC 1. yes, relatives receive care in RC
Human Capital			
Language skills	1. How well do you speak RC language? 2. And how well do you write RC language?	1. Very well 2. Quite well 3. Just so-so 4. Poorly 5. Not at all	Mean of both measures. Range from 1. Not at all *to* 5. Very well

Education	1. What is the highest level of education you attained in CO? 2. What is the highest level of education you attained in RC?	ISCED classification 0. No formal education 1. Primary education 2. Lower secondary education 3. Upper secondary education 4. Post-secondary non-tertiary education 5. Lower level tertiary education 6. Upper lever tertiary education	Highest level of CO and RC education; ISCED classification 1. Low level education (ISCED 0–2) 2. Medium level education (ISCED 3–4) 3. High level education (ISCED 5–6)
Social Capital			
Co-ethnic friends	Please think about all friends you have who live in RC. We would like to know how many friends who live in RC are originally from CO?	1. All 2. Most 3. Several 4. A few 5. None	1. None 2. A few 3. Several 4. Most 5. All
Control Variables			
Household income	What is approximately your family household's total income per month after tax and compulsory deductions from all sources? Please check appropriate box.	1. Less than 600 €/ 4500 k 2. 600–799€/ 4500–5999 kr 3. 800–999 € / 6000–7499 kr 4. 1000–1349 € / 7500–10999 kr 5. 1350–1649 € / 11000–12299 kr 6. 1650–1999 € / 12300–14999 kr 7. 2000–2499 € / 15000–18599 kr 8. 2500–2999 € / 18600–22299 kr 9. 3000–3999 € / 22300–29799 kr 10. 4000–4999 € / 29800–37299 kr 11. 5000 € or more / 37300 kr or more	
Number of household members	We are interested in your living situation here in RC. Are there family members (partners, children, brothers, sisters, parents, of parents-in-law or other relatives) living with your household here in RC.	0. No 1. Yes → if yes, number of household members (up to 7)	
Gender	Are you a man or a woman?	0. Man 1. Woman	
Length of stay	In which year did you first move to the RC to live here for more than 3 months?	Open answer	Year of interview minus year of migration
Use of media in RC	To get information on current affairs and politics, how often do you use media sources (newspapers, television and online sources) from RC?	1. Daily 2. Several times a week 3. Weekly 4. Monthly 5. A few times a year 6. Never	1. Never 2. A few times a year 3. Monthly 4. Weekly 5. Several times a week 6. Daily

Employment status	Which of these descriptions applies the best regarding what you do in a regular week?	1. In paid work (including self-employed) full time 2. In paid work (including self-employed) part time 3. In full-time education 4. Unemployed 5. Permanently sick or disabled and not able to work 6. Wholly retired from work 7. Looking after the home 8. Something else	1. Employed (full-and part-time) 2. In full-time education 3. Unemployed 4. Permanently sick or disabled and not able to work 5. Wholly retired from work 6. Looking after the home 7. Something else